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## The Main and Interactive Associations between Demographic Factors and Psychopathology and Treatment Utilization in Youth: A Test of Intersectionality in the ABCD Study

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### Abstract

Demographic factors may be associated with youth psychopathology due to social-contextual factors that may also pose barriers to intervention. Further, in line with intersectionality theory, youth with multiple non-dominant identities may be most likely to experience psychopathology and face barriers to care. This study examined rates of parent-reported psychopathology and mental health treatment utilization as a function of several demographic characteristics (in isolation and in concert) in a population-based, demographically diverse sample of 11,875 9- to 10-year-old youth. Results indicated most consistently that lower SES was associated with greater rates of psychopathology and greater likelihood of treatment utilization; that Asian American youth (relative to all other racial groups) and Hispanic/Latinx (relative to non-Hispanic/Latinx) youth were less likely to have a history of psychopathology or to have utilized treatment; and that male youth had greater rates of lifetime Obsessive Compulsive Disorder (OCD) and Oppositional Defiant Disorder (ODD) and were more likely to have utilized treatment. There was more modest support for interactive effects between demographic factors on psychopathology, which are discussed. The present study provides some support for differential rates of parent-reported psychopathology and treatment utilization as a function of demographic identities in youth. Potential explanations for these differences (e.g., cultural differences in symptom presentation; underreporting of symptoms) are discussed.

### Keywords

epidemiology; race; ethnicity; SES; adolescent; psychopathology

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Membership in an underrepresented group is associated with heightened risk for mental illness, physical disease, and mortality (Baker, Buchanan, & Spencer, 2010). Although efficacious interventions for psychopathology are available for youth (Weisz et al., 2017), the majority of youth in need of mental health services do not access appropriate care

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(Merikangas et al., 2011). Demographic factors such as race, ethnicity, socioeconomic status (SES), and sex are associated with psychopathology and level of access to mental health treatment in youth (e.g., Anderson & Mayes, 2010; Merikangas et al., 2011; Reiss, 2013). Further, in line with intersectionality theory (Crenshaw, 1989), having multiple non-dominant identities (i.e., identities which have historically been granted less power and/or are not the population-based “majority” in the United States) may be associated with negative health outcomes above and beyond identification with such identities individually due to a variety of systemic and contextual factors (e.g., discrimination). The present study goes beyond previous studies examining main effects of demographic characteristics by examining the main *and* interactive associations between demographic factors, including sex, race, ethnicity, and SES, and history of psychopathology and mental health treatment utilization in a population-based, demographically diverse sample of youth from the Adolescent Brain and Cognitive Development (ABCD) study (Garavan et al., 2018).

Main effects for sex differences have been reported in the prevalence of youth psychopathology, such that male youth have higher rates of externalizing disorders, which are more likely to onset in childhood, whereas female youth have higher rates of internalizing disorders, which are more likely to onset in adolescence (Costello, Foley, & Angold, 2006; Kessler et al., 2012; Kistner, 2009; Zahn-Waxler, Shirtcliff, & Marceau, 2008). Though the literature is somewhat mixed, female youth tend to be at greater risk for anxiety beginning in middle childhood (Costello et al., 2006; Kistner, 2009; Merikangas et al., 2010; Zahn-Waxler et al., 2008). Male youth have higher rates of obsessive-compulsive disorder (OCD) in childhood (Boileau, 2011), whereas female youth have higher rates of post-traumatic stress disorder (PTSD; Merikangas et al., 2010).

Main effects have also been reported for SES on rates of psychopathology. Specifically, SES is associated with higher rates of psychopathology in youth, potentially due to greater stress and social disruption (McBride Murry, Berkel, Gaylord-Harden, Copeland-Linder, & Nation, 2011). A meta-analytic review indicated that youth with low SES are at three times greater risk for mental health problems than high-SES youth (Reiss, 2013). Lower SES is typically linked with greater prevalence of anxiety (Lemstra et al., 2008), PTSD (Lloyd & Turner, 2003), OCD (Heyman et al., 2003), and depression (Costello, Swendsen, Rose, & Dierker, 2008; Lemstra et al., 2008; Miller & Taylor, 2012). Similarly, lower SES is linked to greater externalizing problems (Reising et al., 2013). Preliminary work indicates no associations between SES and eating problems or disorders (Swanson, Crow, Le Grange, Swendsen, & Merikangas, 2011; Wang, Byrne, Kenardy, & Hills, 2005).

Adverse health outcomes are more prevalent among racial or ethnic minority individuals, which may largely be due to systemic racism as perpetuated through segregation (a predictor of poverty and poorer-quality neighborhood/environmental conditions), reduced quality of medical care due to provider biases, and racial trauma resulting from discrimination more broadly (e.g., Williams, Lawrence, & Davis, 2019 for a review). These disparities persist above and beyond the effects of SES, with socioeconomic disparities themselves also rooted in institutionalized racism (e.g., Phelan & Link, 2015; Williams et al., 2019). As an extension to mental health outcomes specifically, many studies find racial/ethnic group disparities in psychopathology among youth.

Depression may be more prevalent among Black or African American and Hispanic or Latinx relative to White or European American youth (Anderson & Mayes, 2010; Costello et al., 2008; Louie & Wheaton, 2018; Miller & Taylor, 2012; Wight, Aneshensel, Botticello, & Sepúlveda, 2005), although there are exceptions (e.g., Angold et al., 2002; Nguyen, Huang, Arganza, & Liao, 2007); among Native Hawaiians relative to White youth (Nguyen et al., 2007); and among Native American youth more than other groups (Saluja et al., 2004). There is equivalent evidence with regard to depression prevalence among Asian American relative to White or European American youth (Anderson & Mayes, 2010; Edman et al., 1998; Herman et al., 2011; Siegel, Aneshensel, Taub, Cantwell, & Driscoll, 1998; Wight et al., 2005). White or European American youth typically have lower rates of anxiety than other groups (Louie & Wheaton, 2018; McLaughlin, Hilt, & Nolen-Hoeksema, 2007; see Burnstein, Beesdo-Baum, He, & Merikangas, 2014 for an exception for generalized anxiety disorder), Hispanic/Latinx youth endorse more somatic symptoms of anxiety (Pina & Silverman, 2004), and Black or African American and Hispanic or Latinx youth are exposed to more trauma than European American youth, though in this sample were not diagnosed more with PTSD (López et al., 2017).

Though some research suggests that externalizing disorders are more commonly diagnosed among Black and Native Hawaiian than European American youth (e.g., Nguyen et al., 2007), epidemiological work typically suggests that European American youth are more likely to be diagnosed with an externalizing (primarily ADHD) or substance use disorder than racial or ethnic minority youth (e.g., Coker et al., 2016; Kessler et al., 2012; Morgan, Staff, Hillemeier, Farkas, & Maczuga, 2013; Pastor & Reuben, 2005). In contrast to epidemiological evidence, studies of medical records show that Black youth are more likely to be diagnosed in the real world with a disruptive behavior disorder (ODD or CD) than White youth, who are more likely to be diagnosed with ADHD alone, potentially indicating provider bias (Ballentine, 2019). Early research in eating disorders indicates that non-Hispanic White adult women are more likely to be diagnosed with anorexia nervosa (Udo & Grilo, 2018), Hispanic youth with bulimia nervosa (Swanson, Crow, LeGrange, Swendsen, & Merikangas, 2011), and differential binge eating symptoms are reported as a function of racial/ethnic identity (e.g., distress and loss of control; Lee-Winn, Reinblatt, Mojtabei, & Mendelson, 2016). Although early work indicates that Afro-Latinx and biracial African American/Caucasian youth may experience greater depression (Fisher, Reynolds, Hsu, Barnes, & Tyler, 2014; Ramos, Jaccard, & Guilamo-Ramos, 2003), and that multiracial Hispanic and non-Hispanic youth are more likely to engage in substance abuse than monoracial Hispanic youth (Whaley & Francis, 2006), limited research has compared rates of psychopathology among multiracial/ethnic relative to monoracial/ethnic youth.

Once identified as in need of services, youth with psychopathology are best served by accessible and efficacious interventions. However, research indicates that Black/African American and/or Hispanic/Latinx youth (e.g., Alegria, Carson, Goncalves, & Keefe, 2011; Angold et al., 2002; Costello, He, Sampson, Kessler, & Merikangas, 2014; Gudiño, Lau, Yeh, McCabe, & Hough, 2009; Marrast, Himmelstein, & Woolhandler, 2016; Merikangas et al., 2011; Zito, Safer, Zuckerman, Gardner, & Soeken, 2005) and Asian/Pacific Islander youth (Gudiño et al., 2009) are significantly less likely to receive mental health intervention than European American youth. These disparities may be due to factors such as poorer

quality care offered, disproportionate lack of representation of racially/ethnically diverse health care providers (Fiscella, Franks, Gold, & Clancy, 2000; McGuire & Miranda, 2008), systemic punitive rather than intervening measures taken more often (Marrast et al., 2016), and resulting cultural mistrust about mental health service utilization (Whaley, 2001). Adolescents from lower-income households are also less likely to utilize services (Cohen & Hesselbart, 1993; Newacheck, Hung, Jane Park, Brindis, & Irwin Jr, 2003; Wu et al., 2001), potentially due to cost barriers. Consistent with the pattern of gender differences in rates of psychopathology developmentally, younger male youth are more likely to utilize services, while female youth become more likely to do so in later years (Cuffe et al., 2001). The disparities in rates of psychopathology reviewed previously might be further maintained by systemic barriers to accessing interventions that are designed to attenuate symptoms.

Research has primarily considered demographic factors individually and non-interactively in association with psychopathology. Although individual demographic characteristics may be associated with mental health disparities, intersectionality theory (Crenshaw, 1989; Rosenthal, 2016 as an extension to psychology) argues that systemic oppression and adversity may also be perpetuated through the effects of identifying with multiple non-dominant identities (e.g., identification as Black/African-American and female) due to compounded marginalization by systems of privilege. As such, it may be that youth who are *most* vulnerable to psychopathology have *multiple* non-dominant identities. For example, low SES early in life is linked to greater depressive symptom severity and hyperactivity over time for Black/African American and Hispanic youth, yet may protect against symptoms for European American youth (McLeod & Owens, 2004). Latina girls may be more vulnerable to depression and anxiety than individuals who identify with other combinations of gender and ethnicity/race, and Black males reportedly experience more overt symptoms of eating disorders and somatic presentations of anxiety than non-Black males (McLaughlin et al., 2007). Girls more broadly, while boys who are from racial/ethnic minority backgrounds specifically, are at greater risk for disordered eating relative to European American male peers (Beccia et al., 2019). Intersectionality theory also may be extended to posit that youth with multiple non-dominant identities may have the most profound barriers to accessing treatment, in addition to increased symptom severity. See Figure 1 for a visual depiction of how multiple identities may overlap.

Previous work has primarily focused on the relationship between demographic characteristics and psychopathology individually rather than in concert. Intersectionality theory posits that individuals with combinations of non-dominant identities may be at compounded risk for negative health outcomes due to the overlapping effects of oppression in multiple domains (Crenshaw, 1989). As an extension of intersectionality theory to psychology and mental health (e.g., Rosenthal, 2016), the present study explored the main and interactive effects of sociodemographic factors on the experience of various forms of psychopathology and engagement in mental health treatment among 9- to 10-year-old youth. This study expanded upon existing literature through examination in a population-based, demographically diverse sample of youth that afforded the opportunity to examine two- and three-way interactions between sex, SES, and race/ethnicity, including less-studied populations (e.g., Asian American youth; multiple groups of biracial youth). Moreover,

using this sample extends tests of demographic characteristics and psychopathology and treatment use to childhood.

Specifically, we examined the main and interactive associations of these demographics with (1) parent-reported child lifetime history of psychopathology; and (2) child history of utilizing mental health treatment in the ABCD Study. In line with past literature, we hypothesized that male sex would be associated with greater risk for externalizing psychopathology, whereas female sex would be associated with greater risk for internalizing psychopathology. Treatment utilization was expected to be higher among males, because psychopathology is more prevalent among males in this age group. We anticipated that lower SES would be linked to greater risk for psychopathology across domains, but that treatment utilization would be reduced among lower-SES youth, presumably due to cost barriers. Although analyses with regard to race and ethnicity were exploratory and descriptive for more understudied groups, we expected that Black/African American and Hispanic/Latinx youth would typically have higher rates of psychopathology and be less likely to utilize treatment than European American youth. Finally, we expected interactions between demographic variables, such that multiple non-dominant identities would be associated with greater risk for psychopathology broadly and lower likelihood of treatment utilization.

## Methods

### Participants

The sample consisted of 11,875 9- to 10-year-old youth ( $M_{age} = 9.91$ ,  $SD = 0.62$ ) and their parents participating in the ABCD Study, a 21-site study examining how neurobiological and environmental changes may influence youth health and functioning over time. There were 1,720 participants that were twins. Participants were recruited to closely mirror national population demographic norms with regard to race, ethnicity, sex, SES, and urban/rural residency. School-based recruitment was primarily used, with approximately 10% of the sample recruited through additional means (e.g., mailing lists, referrals from already enrolled study participants, summer activity outreach, and twin identification from birth registries). More information about study methods and design is available elsewhere ([abcdstudy.org](http://abcdstudy.org); Garavan et al., 2018). Descriptive data on the demographic characteristics of youth participants are presented in Table 1.

### Measures

**Demographic Characteristics.**—One parent/guardian per participant (hereafter referred to as parent) was administered the ABCD Parent Demographics Survey (Barch et al., 2018), an assessment of the child and family's demographic characteristics including sex, age, SES, racial/ethnic identity, occupation, education, and family structure. The ABCD Parent Demographics Survey was modified from items from the PhenX toolkit (Stover, Harlan, Hammond, Hendershot, & Hamilton, 2010). Of interest to the present study were parent-reported child sex, SES, and race/ethnicity. As we were significantly underpowered to examine outcomes as a function of gender identity (i.e., cisgender vs. transgender male vs. female, gender non-conforming, etc.), we focused on sex differences for the present study rather than attempt to make inferences about gender. Parents reported on their child's sex

assigned at birth (hereafter referred to as “sex”) as male or female; thus, all following uses of “male” or “female” refer to sex. SES was operationalized as total combined family income in the past year, which was assessed via the following: “What is your TOTAL COMBINED FAMILY INCOME for the past 12 months? This should include income (before taxes and deductions) from all sources, wages, rent from properties, social security, disability and/or veteran’s benefits, unemployment benefits, workman’s compensation, help from relative (include child payments and alimony), and so on.” Participants were offered 12 potential response options: 10 options indicating income ranging from (1) less than \$5,000 to (10) \$200,000 and greater (Table 1), followed by “Don’t Know” and “Refuse to Answer” response options. The “Don’t Know” and “Refuse to Answer” endorsements were coded as missing, and the remaining 10 response options were treated as continuous. Ethnicity was assessed by responses to the following: “Do you consider the child Hispanic/Latino/Latina?” Response options of “Don’t Know” and “Refuse to Answer” were dropped for analyses, leaving only responses of “Yes” and “No.” As individuals who identify as Hispanic/Latinx identify with multiple races (e.g., Logan, 2003), and there is considerable variability among Hispanic/Latinx individuals with regard to whether they view this identity as racial or ethnic (Gonzalez-Barrera & Lopez, 2015), ethnicity was treated as a distinct construct from race for the purpose of the study (i.e., Hispanic/Latinx youth were compared to Non-Hispanic/Latinx youth more broadly) to most inclusively account for all reported identities. As all analyses with ethnicity as a predictor contained race in the same model, any differences between Hispanic/Latinx and non-Hispanic/Latinx individuals more broadly can be interpreted as associations between ethnicity and the outcome above and beyond the association for race.

Parents also were asked to indicate their child’s race with the following question: “What race do you consider the child to be? Please check all that apply. European American; Black/African American; American Indian, Native American; Alaska Native; Native Hawaiian; Guamanian; Samoan; Other Pacific Islander; Asian Indian; Chinese; Filipino; Japanese; Korean; Vietnamese; Other Asian; Other Race; Refuse to Answer; Don’t Know.” In order to examine racial differences in outcomes of interest without double-counting participants who identify with multiple races, we decided *a priori* to include participants who uniquely identify with one racial group as defined by the NIH’s racial categories: American Indian or Alaska Native (i.e., Native American), Asian, Black or African-American, Native Hawaiian or Other Pacific Islander, or White, or with specific combinations of two identities across these groups. We set a minimum threshold of 85 participants per group in order to potentially be able to detect associations of interest (i.e., presence or absence of psychopathology history; treatment utilization history) in quantitative analyses. This led to the inclusion of participants who identified as the following: European American, Black/African American, Asian American, biracial (European American & Black/African American), biracial (European American & Native American), and biracial (European American and Asian American; Table 1). Native American only, Native Hawaiian or Other Pacific Islander only, and other biracial/multiracial youth therefore were not included in analyses. Although we did not have large enough Ns to inferentially examine associations between outcomes of interest and unique identification as Native American or Native Hawaiian or Other Pacific Islander, or between outcomes and subgroups of broader

categories (e.g., Chinese rather than Asian American more broadly), we have presented descriptive data on race across response options and outcomes of interest. This provides basic, accessible information about psychopathology prevalence and treatment access in understudied groups within the ABCD study (Supplement 1).

**Lifetime History of Psychopathology and Treatment Utilization.**—Child lifetime history of psychopathology was assessed via a computerized adaptation of the Kiddie Schedule for Affective Disorders and Schizophrenia for DSM-5 (KSADS-5), a semi-structured clinical interview. The KSADS-5 used in the present study was adapted from its original version (Kaufman, Birmaher, & Brent, 1997) into computerized measures administered directly to parents and youth with scores that are automatically generated (Kaufman, Townsend, & Kobak, 2017; Kobak & Kaufman, 2015). Previous research has indicated strong reliability between this adaptation and the traditional interview (Barch et al., 2018). The present study focused solely on parent report, as child report was obtained for only a subset of diagnoses (i.e., only depressive and some, but not all, anxiety disorders). Child history of psychopathology was operationalized as parent-reported past or current history of a DSM-5 depressive disorder, anxiety disorder, obsessive-compulsive disorder, trauma or stressor-related disorder, ADHD, oppositional defiant disorder, conduct disorder, or eating disorder (including unspecified diagnoses). Child treatment utilization history was indicated by parents during the background section of the KSADS-5. Parents responded to the following question with “yes,” “no,” or “not sure”: “Has your child ever received mental health or substance abuse services?” A new treatment utilization variable was computed with “yes” or “no” responses only after responses of “not sure” were recoded as missing. Treatment utilization was indicated generally, without information about the type or duration of or motivation behind utilization. Prevalence of psychopathology history and frequency of treatment utilization in this sample are presented in Table 2.

## Procedure

First, parental informed consent and youth assent to participate was obtained. All data were collected from each participant and a parent via questionnaires and computerized clinical assessments of psychopathology. All measures were administered in English or Spanish, as needed. Only data collected at baseline were utilized in the present study. All study procedures were approved by the central Institutional Review Board (IRB) at the University of California, San Diego (Auchter et al., 2018). Temple University IRB approval was not required for secondary data analysis of de-identified data.

## Data Analytic Plan

Binary logistic regression analyses were conducted using Mplus 8.3. All analyses utilized sample weights based on demographic factors to minimize estimation biases in the data due to complex sampling procedures. Analyses also accounted for the nested structure of data (i.e., individuals nested within sibling/twin pairs). All predictor variables were centered for initial analyses. We first estimated a full model that included main effects of demographic characteristics (SES, race, ethnicity, and sex), two-way interactions (SES X race; SES X ethnicity; SES X sex; race X sex; ethnicity X sex) and three-way interactions (SES X race X sex; SES X ethnicity X sex). After estimating the full model, non-significant interaction

terms for the highest-degree interactions (i.e., omnibus interaction effects) were removed from the model, and the model was re-estimated. We relied on this procedure to identify the most parsimonious set of interaction terms for each outcome. Parameter estimates from these parsimonious models are presented in the manuscript (Tables 3–5; Supplement 2, Tables S1–S3 show estimated proportions of disorders across specific demographic categories). For brevity, the text only describes significant differences/associations. Given the large sample size and number of tests conducted, we only describe associations at a more stringent alpha level ( $p < 0.01$ ).

## Results

### Model Trimming Results

There were no models for which there were significant three-way interactions for SES X race X sex or SES X ethnicity X sex. Thus, models were re-estimated without these terms. After eliminating non-significant two-way interactions in subsequent models, final models included only main effects for parent reported anxiety, depressive, eating, and conduct disorders, OCD, and ODD (Table 3). The final model for ADHD included main effects and the interaction between race and sex (Table 4). Final models also included main effects and interactions between SES and race for treatment use and trauma and stressor-related disorders (Table 5).

### Associations between Demographics and Psychopathology

**Models with Significant Main Effects Only.**—There were no significant main effects of sex, ethnicity, SES, or race on lifetime history of eating disorders. For anxiety disorders, we found main effects of ethnicity, SES, and race. Hispanic/Latinx identity and higher SES were each uniquely associated with lower likelihood of anxiety disorders. With regard to race, we found that European American, biracial European American and Black/African American, and biracial European American and Asian American youth had higher rates of anxiety disorders than Black/African American and Asian American youth. For depression, we found main effects of SES and race. Specifically, higher SES was associated with lower likelihood of depression diagnosis, and European American and biracial European American and Black/African American youth had higher rates of depression than Asian American and biracial European American and Asian American youth. We found main effects of sex, ethnicity, SES, and race on prevalence of ODD. Girls had lower rates of ODD than boys. Being Hispanic/Latinx and having higher SES were each associated with lower likelihood of ODD. Asian American youth had lower rates of ODD than all other racial groups. We also found that rates of ODD were higher for European American and biracial European American and Black/African American youth than Black/African American youth. For CD and OCD, we found main effects of sex, ethnicity, and SES. Female youth had lower rates of these disorders than male youth. Hispanic/Latinx identity and higher SES were each associated with lower likelihood of these disorders.

**Models with Significant Main and Interactive Effects.**—For trauma disorders, we also found significant main effects of ethnicity and SES. Being Hispanic/Latinx was associated with lower likelihood of trauma disorders. The main effect of SES on rates of



trauma disorders was qualified by the effect of race: the relationship between lower SES and greater likelihood of trauma disorders was stronger for European American youth than for Black/African American or biracial European American and Black/African American youth.

For ADHD, we found significant main effects of ethnicity, SES, and race. Being Hispanic/Latinx and having higher SES were each associated with lower likelihood of ADHD. As the main effect of race was qualified by a significant interaction between sex and race, we focus on differences in rates of ADHD across racial groups within boys and girls. For boys, Asian American youth had lower rates of ADHD than all other racial groups. For girls, Asian American youth had lower rates of ADHD than European American and biracial European American and Black/African American youth. European American girls also had higher rates of ADHD than Black/African American girls.

### **Associations between Demographics and Treatment Utilization**

Initial analyses were conducted with the full sample. We found significant main effects of sex, ethnicity, race, and SES on treatment utilization. Being female and Hispanic/Latinx were each independently associated with lower likelihood of treatment use. Asian American youth utilized less treatment than all other racial groups, and Black/African American youth sought treatment less than European American youth. Lower SES predicted greater treatment utilization. Main effects of race and SES were qualified by the interaction between SES and race: the inverse relationship between SES and likelihood of treatment use was stronger for European American youth than for Black/African American youth.

Finally, we conducted a post-hoc analysis examining whether demographic disparities in treatment utilization persisted among the subset of youth with a parent-endorsed lifetime history of psychopathology only. Results from these analyses yielded substantively similar findings, indicating that the demographic disparities in treatment utilization described above were not solely a function of who is at greater risk for psychopathology in this sample.

### **Discussion**

Research has primarily focused on the relationship between demographic characteristics and psychopathology individually rather than in concert. Intersectionality theory (Crenshaw, 1989) posits that individuals with more than one non-dominant identity may be at greater risk for negative outcomes due to the compounded effects of oppression. The present study tested the relationship between individual demographic factors (SES, race, ethnicity, and sex) and their interactions on likelihood of parent-reported psychopathology and treatment utilization in youth. These results potentially shed light on which populations of youth are more likely to experience psychopathology and/or are less likely to access mental health services. Alternative explanations (e.g., underreporting) are also discussed below.

Findings provide mixed support for our hypotheses. Greater treatment utilization among male youth was consistent with hypotheses and greater lifetime rates of OCD and ODD. Also, consistent with previous work (Reiss, 2013), we found that lower SES was associated with greater likelihood of psychopathology. In contrast to previous studies (Cohen & Hesselbart, 1993; Newacheck et al., 2003; Wu et al., 2001), lower SES was associated with

*greater* likelihood of treatment utilization, potentially indicating that lower-SES individuals are able to access services necessary to address symptoms. Alternatively, our results may suggest that disparities in treatment utilization do not differ between the full sample and in the subset of youth with parent-endorsed history of psychopathology only. Also, service utilization was defined broadly in the present study (e.g., medication vs. school counseling vs. therapy), and might include very brief and/or free services outside of the realm of evidence-based intervention, such as a singular visit to a guidance counselor. It is unclear whether the types of services utilized or duration of intervention received differs a function of SES.

With regard to race and ethnicity, the most notable pattern of main effects was that per parent report, Asian American youth were less likely to have a history of most forms of psychopathology than youth from all other racial groups (consistent with prior literature, e.g., Sue, Cheng, Saad, & Chu, 2012), and Hispanic/Latinx youth were also less likely to have parent-reported history of several forms of psychopathology than non-Hispanic/Latinx youth overall. Although it is possible that these groups experience less psychopathology, an alternative explanation is that these individuals are more likely to underreport their children's symptoms, as indices of psychopathology were derived from parent report only. Further, there is some evidence for cultural variability in symptom presentations (e.g., Anderson & Mayes, 2010; Choi & Park, 2006; McLaughlin et al., 2007; Sue et al., 2012), which may not be captured by the diagnostic classification system. Some previous work shows that both Asian American and Hispanic/Latinx youth report more somatic presentations of symptoms than other racial or ethnic groups (Choi & Park, 2006). Internalized stigma about mental health may also deter individuals from reporting symptoms or seeking services (Benuto, Gonzalez, Reinosa-Segovia, & Duckworth, 2019; Gary, 2005; Sue et al., 2012).

Both Asian American and Hispanic/Latinx youth were also less likely to utilize treatment than non-Hispanic/Latinx youth overall. Though this may be due to reduced likelihood of parent-reported psychopathology, there may also be cultural barriers to intervention in these groups. Westernized conceptualizations of health and interventions may not be as culturally relevant or appropriate for some Asian American individuals (e.g., Sue et al., 2012). Latinx immigrants in the United States and Spain have reported barriers such as a desire to manage problems themselves, being unaware of the steps required to initiate treatment, and doubts about the efficacy of intervention (Falgas et al., 2017). Hispanic/Latinx individuals may also be more likely to rely on large family networks in times of need ("*familismo*"; Guarnaccia, Martinez, & Acosta, 2005).

Notably, our study provides information about rates of psychopathology and treatment utilization among several groups of biracial youth. Although biracial youth did not differentially access treatment, the most consistent pattern of findings indicated that biracial Black/African American and European American youth typically experienced rates of parent-reported psychopathology (anxiety, depression, ODD) which were more consistent with European American only than Black/African American only youth. While rates of anxiety among biracial European and Asian American youth were more consistent with that of European American monoracial youth, rates of depression among these biracial youth

were more consistent with that of Asian American monoracial youth. As disparities in mental health and service utilization among biracial youth are significantly understudied, additional research is needed in this area.

This study offered some support for different outcomes as a function of intersecting identities in the context of mental health and treatment utilization. For instance, ADHD was least prevalent among Hispanic/Latinx youth of higher SES, and European American girls had higher rates of ADHD than Black/African American girls. The main effect of less treatment utilization among Black/African American than European American youth should be interpreted in light of an interaction: lower SES was more strongly associated with treatment utilization among European American than Black/African American youth. One interpretation of this finding, in line with intersectionality theory, is that in the midst of stressors conferred by low SES, low-income European American youth are more likely to receive support via mental health treatment than low-income Black/African American youth. It is possible that some families of Black/African American youth have reasonable distrust in the utility of mental health interventions due to racial/ethnic disparities in quality of medical care, disproportionate lack of representation of racially diverse health care providers (Fiscella, Franks, Gold, & Clancy, 2000; McGuire & Miranda, 2008), and experience of oppression in the United States more broadly (Whaley, 2001); further, there is a greater likelihood of punitive measures taken in place of intervention with racial or ethnic minority youth (e.g., school punishment and incarceration; Marrast et al., 2016). Interestingly, lower SES was also more strongly associated with greater parent report of trauma and stressor-related disorder history among European American than Black/African American or biracial European American and Black/African American youth. Future work should investigate mechanisms of this finding.

The present study has several strengths that add to the literature on demographic correlates of mental health outcomes in youth. First, work on mental health disparities has primarily been conducted in samples of adults. This study was able to provide evidence that these disparities may emerge as early as age nine. These findings also add to our understanding of risk for psychopathology and/or barriers to treatment utilization among several understudied groups, including Asian American youth as well as multiple groups of biracial youth. Examination of these processes in a large, nationally representative sample both increases power to examine three-way interactive effects and maximizes generalizability of these findings. We also examined demographic risk for disorder rather than symptom levels, which may provide more information about risk for clinical levels of dysfunction.

However, there are several limitations of note. Our operationalization of SES (total household income) fails to incorporate other factors that contribute to SES. Although we were able to examine rates of psychopathology and treatment utilization among understudied groups, we may have been underpowered to detect effects with individuals of some groups (i.e., biracial European American and Native American youth), and were unable to study other youth (i.e., Native American only or Native Hawaiian/Other Pacific Islander youth) due to very small sample size. As we may have been most underpowered in tests of three-way interactions, lack of significance with these models should be interpreted in this context as well. However, we provide descriptive information about these groups to

begin to build our knowledge (Supplement 1). We examined treatment utilization more broadly (i.e., including pharmacotherapy, psychotherapy, etc.). As such, it is unclear whether factors such as length or dose of treatment play a role, and results do not indicate whether demographic factors are associated with likelihood of utilizing evidence-based interventions specifically or which forms of treatment (i.e., medication versus psychotherapy). We examined a restricted age of youth (9–10), and many forms of psychopathology do not typically emerge until adolescence (e.g., Zahn-Waxler et al., 2008). Future follow-up assessments within this cohort can extend these findings and identify when additional disparities emerge. Diagnoses were made based on parental report only and did not include clinician evaluation, and as such may be influenced by reporter bias (e.g., reduced awareness of clinical thresholds, or tendencies to underreport). This may also have inflated the prevalence of psychopathology in this sample. Finally, results may be generalizable to the United States only due to an often-prohibitive cost to access mental health care combined with a lack of universal health care coverage provided to all residents regardless of wealth, barriers to access which are not present in all countries.

Results from the present study provide information about demographic disparities in psychopathology and treatment utilization, as well as the ways in which demographic factors intersect in association with adverse mental health outcomes. Future work should expand upon these findings by studying potential mechanisms. If lower rates of parent-reported psychopathology among Asian American and Hispanic/Latinx groups are attributable to underreporting and/or differential presentation of symptoms (e.g., Anderson & Mayes, 2010; Choi & Park, 2006; McLaughlin et al., 2007; Sue et al., 2012), attempts should be made to better understand and disseminate information about common presentations of psychopathology among Asian American and Hispanic/Latinx youth to their parents, schools, and other medical providers. This may improve the cultural sensitivity of screening, prevention, and early intervention efforts. Another important implication of this work is evidence for potential barriers to treatment among Black/African American youth from low-SES families relative to low-SES European American youth, as well as for Hispanic/Latinx and Asian American youth more generally. Efforts should be made to reduce institutional barriers for these as well as other non-dominant youth who are less likely to utilize treatment. Promoting diversity among providers may increase the cultural sensitivity of interventions and encourage utilization among non-dominant youth and their families.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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## References

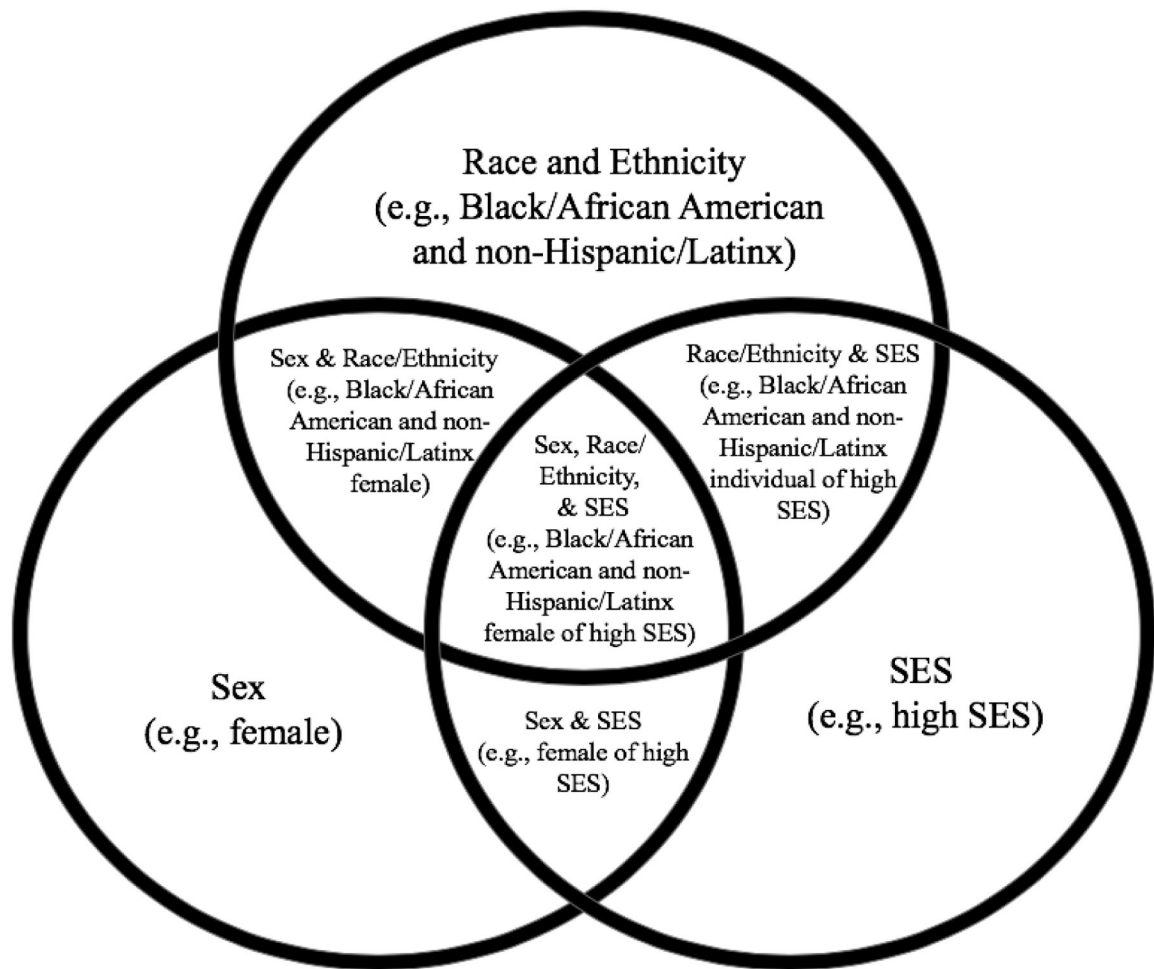
- Alegria M, Carson NJ, Goncalves M, & Keefe K (2011). Disparities in treatment for substance use disorders and co-occurring disorders for ethnic/racial minority youth. *Journal of the American Academy of Child & Adolescent Psychiatry*, 50(1), 22–31. [PubMed: 21156267]
- Anderson ER, & Mayes LC (2010). Race/ethnicity and internalizing disorders in youth: A review. *Clinical psychology review*, 30(3), 338–348. [PubMed: 20071063]
- Angold A, Erkanli A, Farmer EM, Fairbank JA, Burns BJ, Keeler G, & Costello EJ (2002). Psychiatric disorder, impairment, and service use in rural African American and white youth. *Archives of general psychiatry*, 59(10), 893–901. [PubMed: 12365876]
- Auchter AM, Mejia MH, Heyser CJ, Shilling PD, Jernigan TL, Brown SA, ... & Dowling GJ (2018). A description of the ABCD organizational structure and communication framework. *Developmental cognitive neuroscience*, 32, 8–15. [PubMed: 29706313]
- Baker TA, Buchanan N, & Spencer TR (2010). Disparities and social inequities: is the health of African American women still in peril? *Ethnicity & disease*, 20(3), 304–309. [PubMed: 20828107]
- Ballentine KL (2019). Understanding Racial Differences in Diagnosing ODD Versus ADHD Using Critical Race Theory. *Families in Society*, 100(3), 282–292.
- Barch DM, Albaugh MD, Avenevoli S, Chang L, Clark DB, Glantz MD, ... Yurgelun-Todd D (2018). Demographic, physical and mental health assessments in the adolescent brain and cognitive development study: rationale and description. *Developmental cognitive neuroscience*, 32, 55–66. [PubMed: 29113758]
- Beccia AL, Baek J, Jesdale WM, Austin SB, Forrester S, Curtin C, & Lapane KL (2019). Risk of disordered eating at the intersection of gender and racial/ethnic identity among US high school students. *Eating behaviors*, 34, 101299. [PubMed: 31153023]
- Benuto LT, Gonzalez F, Reinoso-Segovia F, & Duckworth M (2019). Mental Health Literacy, Stigma, and Behavioral Health Service Use: the Case of Latinx and Non-Latinx Whites. *Journal of racial and ethnic health disparities*, 6(6), 1122–1130. [PubMed: 31327136]
- Boileau B (2011). A review of obsessive-compulsive disorder in children and adolescents. *Dialogues in clinical neuroscience*, 13(4), 401. [PubMed: 22275846]
- Burstein M, Beesdo-Baum K, He J-P, & Merikangas K (2014). Threshold and subthreshold generalized anxiety disorder among US adolescents: prevalence, sociodemographic, and clinical characteristics. *Psychological medicine*, 44(11), 2351. [PubMed: 24384401]
- Choi H, & Park CG (2006). Understanding adolescent depression in ethnocultural context: Updated with empirical findings. *Advances in Nursing Science*, 29(4), E1–E12.
- Cohen P, & Hesselbart CS (1993). Demographic factors in the use of children's mental health services. *American Journal of Public Health*, 83(1), 49–52. [PubMed: 8417606]
- Coker TR, Elliott MN, Toomey SL, Schwebel DC, Cuccaro P, Emery ST, ... Schuster MA (2016). Racial and ethnic disparities in ADHD diagnosis and treatment. *Pediatrics*, 138(3).
- Costello DM, Swendsen J, Rose JS, & Dierker LC (2008). Risk and protective factors associated with trajectories of depressed mood from adolescence to early adulthood. *Journal of consulting and clinical psychology*, 76(2), 173. [PubMed: 18377115]
- Costello EJ, Foley DL, & Angold A (2006). 10-year research update review: the epidemiology of child and adolescent psychiatric disorders: II. Developmental epidemiology. *Journal of the American Academy of Child & Adolescent Psychiatry*, 45(1), 8–25. [PubMed: 16327577]
- Costello EJ, He J. p., Sampson NA, Kessler RC, & Merikangas KR (2014). Services for adolescents with psychiatric disorders: 12-month data from the National Comorbidity Survey–Adolescent. *Psychiatric services*, 65(3), 359–366. [PubMed: 24233052]
- Crenshaw K (1989). Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *u. Chi. Legal f*, 139.
- Cuffe SP, Waller JL, Addy CL, McKeown RE, Jackson KL, Moloo J, & Garrison CZ (2001). A longitudinal study of adolescent mental health service use. *The Journal of Behavioral Health Services & Research*, 28(1), 1–11. [PubMed: 11329994]

- Edman J, Andrade NN, Glipa J, Foster J, Danko G, Yates A, ... Waldron J (1998). Depressive symptoms among Filipino American adolescents. *Cultural Diversity and Mental Health*, 4(1), 45. [PubMed: 9458591]
- Falgas I, Ramos Z, Herrera L, Qureshi A, Chavez L, Bonal C, ... Alegría M (2017). Barriers to and correlates of retention in behavioral health treatment among latinos in two different host countries: US and Spain. *Journal of public health management and practice: JPHMP*, 23(1), e20. [PubMed: 26910867]
- Fiscella K, Franks P, Gold MR, & Clancy CM (2000). Inequality in quality: addressing socioeconomic, racial, and ethnic disparities in health care. *Jama*, 283(19), 2579–2584. [PubMed: 10815125]
- Fisher S, Reynolds JL, Hsu WW, Barnes J, & Tyler K (2014). Examining multiracial youth in context: Ethnic identity development and mental health outcomes. *Journal of youth and adolescence*, 43(10), 1688–1699. [PubMed: 25100614]
- Garavan H, Bartsch H, Conway K, Decastro A, Goldstein R, Heeringa S, ... Zahs D (2018). Recruiting the ABCD sample: design considerations and procedures. *Developmental cognitive neuroscience*, 32, 16–22. [PubMed: 29703560]
- Gary FA (2005). Stigma: Barrier to mental health care among ethnic minorities. *Issues in mental health nursing*, 26(10), 979–999. [PubMed: 16283995]
- Gonzalez-Barrera A, & Lopez MH (2015). Is being Hispanic a matter of race, ethnicity or both. *Pew Research Center*, 15.
- Guarnaccia PJ, Martinez I, & Acosta H (2005). Chapter 2. Mental health in the Hispanic immigrant community: An overview. *Journal of Immigrant & Refugee Services*, 3(1–2), 21–46.
- Gudiño OG, Lau AS, Yeh M, McCabe KM, & Hough RL (2009). Understanding racial/ethnic disparities in youth mental health services: Do disparities vary by problem type? *Journal of Emotional and Behavioral Disorders*, 17(1), 3–16.
- Herman S, Archambeau OG, Deliramich AN, Kim BS, Chiu PH, & Frueh BC (2011). Depressive symptoms and mental health treatment in an ethnographically diverse college student sample. *Journal of American College Health*, 59(8), 715–720. [PubMed: 21950252]
- Heyman I, Fombonne E, Simmons H, Ford T, Meltzer H, & Goodman R (2003). Prevalence of obsessive-compulsive disorder in the British nationwide survey of child mental health. *International Review of Psychiatry*, 15(1–2), 178–184. [PubMed: 12745330]
- Kaufman J, Birmaher B, & Brent D (1997). Kiddie Schedule for Affective Disorders and Schizophrenia. *Journal of the American Acad. Child and Adolescent Psychiatry*, 36(4), 545–553.
- Kaufman J, Townsend LD, & Kobak K (2017). The Computerized Kiddie Schedule for Affective Disorders and Schizophrenia (KSADS): Development and Administration Guidelines. Paper presented at the 64th Annual Meeting.
- Kessler RC, Avenevoli S, Costello EJ, Georgiades K, Green JG, Gruber MJ, ... Petukhova M (2012). Prevalence, persistence, and sociodemographic correlates of DSM-IV disorders in the National Comorbidity Survey Replication Adolescent Supplement. *Archives of general psychiatry*, 69(4), 372–380. [PubMed: 22147808]
- Kistner JA (2009). Sex differences in child and Adolescent psychopathology: an introduction to the special section. *Journal of Clinical Child & Adolescent Psychology*, 38(4), 453–459. [PubMed: 20183633]
- Kobak K, & Kaufman J (2015). *Ksads-comp*. Center for Telepsychology, Madison, WI.
- Lee-Winn AE, Reinblatt SP, Mojtabei R, & Mendelson T (2016). Gender and racial/ethnic differences in binge eating symptoms in a nationally representative sample of adolescents in the United States. *Eating behaviors*, 22, 27–33. [PubMed: 27085166]
- Lemstra M, Neudorf C, D'Arcy C, Kunst A, Warren LM, & Bennett NR (2008). A systematic review of depressed mood and anxiety by SES in youth aged 10–15 years. *Canadian Journal of Public Health*, 99(2), 125–129. [PubMed: 18457287]
- Lloyd DA, & Turner RJ (2003). Cumulative adversity and posttraumatic stress disorder: Evidence from a diverse community sample of young adults. *American Journal of Orthopsychiatry*, 73(4), 381–391.
- Logan JR (2003). How race counts for Hispanic Americans.

- López CM, Andrews III AR, Chisolm AM, de Arellano MA, Saunders B, & Kilpatrick D (2017). Racial/ethnic differences in trauma exposure and mental health disorders in adolescents. *Cultural diversity and ethnic minority psychology*, 23(3), 382. [PubMed: 27786496]
- Louie P, & Wheaton B (2018). Prevalence and Patterning of Mental Disorders Through Adolescence in 3 Cohorts of Black and White Americans. *American Journal of Epidemiology*, 187(11), 2332–2338. [PubMed: 29992256]
- Marrast L, Himmelstein DU, & Woolhandler S (2016). Racial and ethnic disparities in mental health care for children and young adults: A national study. *International Journal of Health Services*, 46(4), 810–824. [PubMed: 27520100]
- McBride Murry V, Berkel C, Gaylord-Harden NK, Copeland-Linder N, & Nation M (2011). Neighborhood poverty and adolescent development. *Journal of Research on Adolescence*, 21(1), 114–128.
- McGuire TG, & Miranda J (2008). New evidence regarding racial and ethnic disparities in mental health: Policy implications. *Health Affairs*, 27(2), 393–403. [PubMed: 18332495]
- McLaughlin KA, Hilt LM, & Nolen-Hoeksema S (2007). Racial/ethnic differences in internalizing and externalizing symptoms in adolescents. *Journal of abnormal child psychology*, 35(5), 801–816. [PubMed: 17508278]
- McLeod JD, & Owens TJ (2004). Psychological well-being in the early life course: Variations by socioeconomic status, gender, and race/ethnicity. *Social Psychology Quarterly*, 67(3), 257–278.
- Merikangas KR, He J. p., Burstein M, Swanson SA, Avenevoli S, Cui L, ... Swendsen J (2010). Lifetime prevalence of mental disorders in US adolescents: results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, 49(10), 980–989. [PubMed: 20855043]
- Merikangas KR, He J. p., Burstein M, Swendsen J, Avenevoli S, Case B, ... Olfson M (2011). Service utilization for lifetime mental disorders in US adolescents: results of the National Comorbidity Survey–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, 50(1), 32–45. [PubMed: 21156268]
- Miller B, & Taylor J (2012). Racial and socioeconomic status differences in depressive symptoms among black and white youth: An examination of the mediating effects of family structure, stress and support. *Journal of youth and adolescence*, 41(4), 426–437. [PubMed: 21614536]
- Morgan PL, Staff J, Hillemeier MM, Farkas G, & Maczuga S (2013). Racial and ethnic disparities in ADHD diagnosis from kindergarten to eighth grade. *Pediatrics*, 132(1), 85–93. [PubMed: 23796743]
- Newacheck PW, Hung YY, Jane Park M, Brindis CD, & Irwin CE Jr (2003). Disparities in adolescent health and health care: does socioeconomic status matter? *Health services research*, 38(5), 1235–1252. [PubMed: 14596388]
- Nguyen L, Huang LN, Arganza GF, & Liao Q (2007). The influence of race and ethnicity on psychiatric diagnoses and clinical characteristics of children and adolescents in children's services. *Cultural diversity and ethnic minority psychology*, 13(1), 18. [PubMed: 17227173]
- Pastor PN, & Reuben CA (2005). Racial and ethnic differences in ADHD and LD in young school-age children: parental reports in the National Health Interview Survey. *Public health reports*, 120(4), 383–392. [PubMed: 16025718]
- Phelan JC, & Link BG (2015). Is racism a fundamental cause of inequalities in health? *Annual Review of Sociology*, 41, 311–330.
- Pina AA, & Silverman WK (2004). Clinical phenomenology, somatic symptoms, and distress in Hispanic/Latino and European American youths with anxiety disorders. *Journal of clinical child and adolescent psychology*, 33(2), 227–236. [PubMed: 15136186]
- Ramos B, Jaccard J, & Guilamo-Ramos V (2003). Dual ethnicity and depressive symptoms: Implications of being Black and Latino in the United States. *Hispanic Journal of Behavioral Sciences*, 25(2), 147–173.
- Reising MM, Watson KH, Hardcastle EJ, Merchant MJ, Roberts L, Forehand R, & Compas BE (2013). Parental depression and economic disadvantage: The role of parenting in associations with internalizing and externalizing symptoms in children and adolescents. *Journal of child and family studies*, 22(3), 335–343.

- Reiss F (2013). Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. *Social science & medicine*, 90, 24–31. [PubMed: 23746605]
- Rosenthal L (2016). Incorporating intersectionality into psychology: An opportunity to promote social justice and equity. *American Psychologist*, 71(6), 474.
- Saluja G, Iachan R, Scheidt PC, Overpeck MD, Sun W, & Giedd JN (2004). Prevalence of and risk factors for depressive symptoms among young adolescents. *Archives of pediatrics & adolescent medicine*, 158(8), 760–765. [PubMed: 15289248]
- Siegel JM, Aneshensel CS, Taub B, Cantwell DP, & Driscoll AK (1998). Adolescent depressed mood in a multiethnic sample. *Journal of youth and adolescence*, 27(4), 413–427.
- Stover PJ, Harlan WR, Hammond JA, Hendershot T, & Hamilton CM (2010). PhenX: a toolkit for interdisciplinary genetics research. *Current opinion in lipidology*, 21(2), 136–140. [PubMed: 20154612]
- Sue S, Cheng JKY, Saad CS, & Chu JP (2012). Asian American mental health: A call to action. *American Psychologist*, 67(7), 532.
- Swanson SA, Crow SJ, Le Grange D, Swendsen J, & Merikangas KR (2011). Prevalence and correlates of eating disorders in adolescents: Results from the national comorbidity survey replication adolescent supplement. *Archives of general psychiatry*, 68(7), 714–723. [PubMed: 21383252]
- Udo T, & Grilo CM (2018). Prevalence and correlates of DSM-5–defined eating disorders in a nationally representative sample of US adults. *Biological psychiatry*, 84(5), 345–354. [PubMed: 29859631]
- Wang Z, Byrne NM, Kenardy JA, & Hills AP (2005). Influences of ethnicity and socioeconomic status on the body dissatisfaction and eating behaviour of Australian children and adolescents. *Eating behaviors*, 6(1), 23–33. [PubMed: 15567108]
- Weisz JR, Kuppens S, Ng MY, Eckshtain D, Ugueto AM, Vaughn-Coaxum R, ... Chu BC (2017). What five decades of research tells us about the effects of youth psychological therapy: a multilevel meta-analysis and implications for science and practice. *American Psychologist*, 72(2), 79.
- Whaley AL (2001). Cultural mistrust and mental health services for African Americans: A review and meta-analysis. *The Counseling Psychologist*, 29(4), 513–531.
- Whaley AL, & Francis K (2006). Behavioral health in multiracial adolescents: The role of Hispanic/Latino ethnicity. *Public Health Reports*, 121(2), 169–174. [PubMed: 16528950]
- Wight RG, Aneshensel CS, Botticello AL, & Sepúlveda JE (2005). A multilevel analysis of ethnic variation in depressive symptoms among adolescents in the United States. *Social science & medicine*, 60(9), 2073–2084. [PubMed: 15743655]
- Williams DR, Lawrence JA, & Davis BA (2019). Racism and health: evidence and needed research. *Annual review of public health*, 40, 105–125.
- Wu P, Hoven CW, Cohen P, Liu X, Moore RE, Tiet Q, ... Bird HR (2001). Factors associated with use of mental health services for depression by children and adolescents. *Psychiatric services*, 52(2), 189–195. [PubMed: 11157117]
- Zahn-Waxler C, Shirtcliff EA, & Marceau K (2008). Disorders of childhood and adolescence: Gender and psychopathology. *Annu. Rev. Clin. Psychol.*, 4, 275–303.
- Zito JM, Safer DJ, Zuckerman IH, Gardner JF, & Soeken K (2005). Effect of Medicaid eligibility category on racial disparities in the use of psychotropic medications among youths. *Psychiatric Services*, 56(2), 157–163. [PubMed: 15703342]





**Figure 1.**  
A visual depiction of intersectionality theory in terms of race/ethnicity, sex, and SES.

**Table 1.**

Demographic characteristics of the sample.

Variable	N	%
<b>Sex</b>	--	--
<i>Male</i>	6,188	52.11
<i>Female</i>	5,681	47.84
<b>Total Combined Household Income (Past 12 Months)</b>	--	--
<\$5,000	416	3.5
\$5,000–\$11,999	422	3.55
\$12,000–\$15,999	274	2.31
\$16,000–\$24,999	523	4.4
\$25,000–\$34,999	653	5.5
\$35,000–\$49,999	934	7.87
\$50,000–\$74,999	1,499	12.62
\$75,000–\$99,999	1,571	13.23
\$100,000–\$199,999	3,316	27.92
>\$200,000	1,249	10.52
<b>Ethnicity</b>	--	--
<i>Hispanic/Latinx</i>	2,409	20.29
<i>Non-Hispanic/Latinx</i>	9,308	78.38
<b>Race</b>	--	--
<i>White</i>	7,516	63.29
<i>Black/African-American</i>	1,866	15.71
<i>Asian American</i>	276	2.32
<i>Biracial (White &amp; Black/African-American)</i>	423	3.56
<i>Biracial (White &amp; Native American)</i>	198	1.67
<i>Biracial (White &amp; Asian American)</i>	355	2.99

**Table 2.**

Descriptive statistics: rates of psychopathology and treatment utilization.

Variable	N	%
<b>Child Lifetime Depression History</b>		
<i>Yes</i>	741	6.33
<i>No</i>	10,969	93.67
<b>Child Lifetime Anxiety History</b>		
<i>Yes</i>	4371	37.17
<i>No</i>	7389	62.83
<b>Child Lifetime ADHD History</b>		
<i>Yes</i>	2551	21.8
<i>No</i>	9150	78.2
<b>Child Lifetime ODD History</b>		
<i>Yes</i>	1667	14.25
<i>No</i>	10034	85.75
<b>Child Lifetime Conduct Disorder History</b>		
<i>Yes</i>	374	3.2
<i>No</i>	11327	96.8
<b>Child Lifetime OCD History</b>		
<i>Yes</i>	1260	10.78
<i>No</i>	10430	89.22
<b>Child Lifetime Trauma Disorder History</b>		
<i>Yes</i>	550	4.7
<i>No</i>	11140	95.3
<b>Child Lifetime Eating Disorder History</b>		
<i>Yes</i>	1207	10.3
<i>No</i>	10514	89.7
<b>Child Treatment Utilization</b>		
<i>Yes</i>	1,877	15.9
<i>No</i>	9,925	84.1

**Table 3.**

Main effects only of demographic characteristics on psychopathology.

	ANX		DEP		ED		CON		OCD		ODD	
	<i>t</i> / $\chi^2$	OR (95% CI)	<i>t</i> / $\chi^2$	OR (95% CI)	<i>t</i> / $\chi^2$	OR (95% CI)	<i>t</i> / $\chi^2$	OR (95% CI)	<i>t</i> / $\chi^2$	OR (95% CI)	<i>t</i> / $\chi^2$	OR (95% CI)
<b>Sex</b>	1.67	1.09 (0.99–1.19)	-2.28	0.8 (0.66–0.97)	-0.44	0.97 (0.83–1.13)	-5.02*	0.45 (0.33–0.61)	-4.25**	0.72 (0.62–0.84)	-6.64**	0.63 (0.55–0.72)
<b>Race</b>	55.52**		24.00**		14.91		11.99		10.70		49.49**	
<b>BAA</b>	-4.73**	0.69 (0.59–0.81)	-2.09	0.73 (0.55–0.98)	-2.66	0.71 (0.55–0.91)	1.66	1.38 (0.94–2)	-2.60	0.74 (0.59–0.93)	-3.49**	0.67 (0.54–0.84)
<b>ASI</b>	-4.30**	0.49 (0.35–0.68)	-2.41	0.31 (0.12–0.8)	1.54	1.38 (0.92–2.09)	-1.39	0.43 (0.13–1.42)	-0.90	0.79 (0.48–1.32)	-3.69**	0.28 (0.14–0.55)
<b>BWB</b>	0.14	1.02 (0.78–1.32)	1.05	1.25 (0.82–1.89)	-0.54	0.89 (0.57–1.38)	0.10	1.03 (0.54–1.99)	0.82	1.16 (0.81–1.68)	1.14	1.19 (0.88–1.62)
<b>BWNA</b>	-0.21	0.96 (0.66–1.4)	0.92	1.31 (0.73–2.35)	0.36	1.11 (0.63–1.94)	2.28	2.25 (1.12–4.52)	1.00	1.32 (0.77–2.28)	0.73	1.20 (0.74–1.95)
<b>BWAS</b>	0.86	1.13 (0.85–1.51)	-2.48	0.41 (0.2–0.83)	2.06	1.56 (1.02–2.38)	1.18	1.56 (0.74–3.28)	0.42	1.12 (0.65–1.95)	-0.19	0.96 (0.62–1.48)
<b>ETH</b>	-3.24*	0.79 (0.69–0.91)	-0.90	0.88 (0.68–1.16)	1.01	1.12 (0.9–1.39)	-2.81*	0.50 (0.31–0.81)	-2.60*	0.74 (0.6–0.93)	-5.18**	0.57 (0.46–0.7)
<b>SES</b>	-4.57**	0.95 (0.93–0.97)	-7.87**	0.85 (0.82–0.89)	-1.59	0.97 (0.93–1.01)	-6.05**	0.84 (0.79–0.89)	-8.22**	0.87 (0.84–0.9)	-3.80**	0.94 (0.91–0.97)

*t*/ $\chi^2$  indicates a t-statistic or chi-square statistic; OR = odds ratio; CI = confidence interval. BAA=Black/African American; ASI=Asian American; BWB=Biracial (European American and Black/African American); BWNA=Biracial (European American and Native American); BWAS=Biracial (European American and Asian American); ETH=Ethnicity; SES=socioeconomic status. Additional post-hoc comparisons were run between all racial groups (i.e., not just with European American as the reference group; results are detailed in the text and the supplemental tables.)

\*  $P < 0.01$ ;

\*\*  $P < 0.001$

**Table 4.**

Models with race by sex predicting rates of ADHD.

	ADHD	
	<i>t/</i> $\chi^2$	OR (95% CI)
<b>Sex</b>	-11.64**	0.50 (0.44–0.56)
<b>Race</b>	35.16**	
Black/African American	-1.06	0.91 (0.76–1.09)
Asian American	-3.71**	0.38 (0.22–0.63)
Biracial (European American and Black/African American)	2.07	1.36 (1.02–1.81)
Biracial (European American and Native American)	0.52	1.12 (0.73–1.71)
Biracial (European American and Asian American)	0.68	1.13 (0.79–1.62)
<b>Ethnicity</b>	-2.61*	0.8 (0.67–0.95)
<b>SES</b>	-5.52**	0.93 (0.9–0.95)
<b>Race X Sex</b>	22.96**	
Sex_Black/African American	-4.39**	0.51 (0.37–0.69)
Sex_Asian American	-0.30	0.87 (0.35–2.16)
Sex_Biracial (European American and Black/African American)	-1.31	0.68 (0.39–1.21)
Sex_Biracial (European American and Native American)	-0.94	0.69 (0.32–1.5)
Sex_Biracial (European American and Asian American)	-0.84	0.74 (0.37–1.5)

*t/*  $\chi^2$  indicates a t-statistic or chi-square statistic; OR = odds ratio; CI = confidence interval. BAA=Black/African American; ASI=Asian American; BWB=Biracial (European American and Black/African American); BWNA=Biracial (European American and Native American); BWAS=Biracial (European American and Asian American); ETH=Ethnicity; SES=socioeconomic status. Additional post-hoc comparisons were run between all racial groups (i.e., not just with European American as the reference group; results are detailed in the text and the supplemental tables.)

\*  
 $p < 0.01$ ;

\*\*  
 $p < 0.001$

**Table 5.** Models with race by SES predicting treatment utilization and rates of trauma disorder history.

	Trauma Disorder		Treatment Utilization	
	<i>t</i> / $\chi^2$	OR (95% CI)	<i>t</i> / $\chi^2$	OR (95% CI)
<b>Sex</b>	0.05	1.01 (0.80–1.26)	-5.27**	0.70 (0.62–0.8)
<b>Race</b>	6.98		41.65**	
Black/African American	0.33	1.06 (0.74–1.51)	-2.92**	0.70 (0.55–0.89)
Asian American	-0.94	0.68 (0.30–1.52)	-3.49**	0.27 (0.13–0.56)
Biracial (European American and Black/African American)	2.68	1.94 (1.20–3.15)	0.35	1.07 (0.75–1.51)
Biracial (European American and Native American)	0.43	1.18 (0.56–2.50)	0.67	1.18 (0.73–1.9)
Biracial (European American and Asian American)	0.67	1.27 (0.63–2.54)	-0.9	0.82 (0.53–1.27)
<b>Ethnicity</b>	-3.30**	0.55 (0.39–0.79)	-6.72**	0.47 (0.38–0.59)
<b>SES</b>	-10.49**	0.79 (0.76–0.83)	-6.12**	0.90 (0.87–0.93)
<b>Income X Race</b>	20.65**		15.58*	
Income_Black/African American	3.51**	1.19 (1.08–1.32)	3.05*	1.12 (1.04–1.20)
Income_Asian American	0.6	1.11 (0.79–1.55)	1.53	1.33 (0.92–1.92)
Income_Biracial (European American and Black/African American)	3.69**	1.32 (1.14–1.54)	1.18	1.08 (0.95–1.22)
Income_Biracial (European American and Native American)	-0.33	0.96 (0.75–1.22)	0.32	1.03 (0.85–1.25)
Income_Biracial (European American and Asian American)	-0.17	0.97 (0.69–1.36)	-0.6	0.94 (0.78–1.14)

*t*/ $\chi^2$  indicates a t-statistic or chi-square statistic; OR = odds ratio; CI = confidence interval. BAA=Black/African American; ASI=Asian American; BWB=Biracial (European American and Black/African American); BWNA=Biracial (European American and Native American); BWAS=Biracial (European American and Asian American); ETH=Ethnicity; SES=socioeconomic status. Additional post-hoc comparisons were run between all racial groups (i.e., not just with European American as the reference group; results are detailed in the text and the supplemental tables.)

\*  $p < 0.01$ ;

\*\*  $p < 0.001$